

Remarks/Arguments

The office action of 2/20/2007 rejected Claims 1, 2, 3, and 13 as being anticipated by Hardy (4,360,003). I have carefully reviewed the cited patent and believe that my claims are not anticipated by Hardy (4,360,003). I have amended my claims to show the clear distinction between my invention and Hardy's.

Hardy actually recites two separate systems in his patent **Claim 1**. First "a system for providing hot water in a home heating system" to supply room radiators, and second a system "hot water for domestic water system".

Hardy's system for providing hot water to home heating includes a reservoir (36) (See Figures 2 and 3) of heated fluid over a firebox heated by fuel, this reservoir is at atmospheric pressure and has an overflow (71) (See Figure 5). Hot fluid is pumped from near the top of the reservoir to the home radiators and back to the cooler bottom of the reservoir. **Hardy Col. 4, lines 45-51** "Water contained in water tank 36 and heated to the proper temperature is pumped from the water tank through outlet 56 by means of pump 58 and into water outlet line 60 for entry into the heating system of home 12. Water is returned from the heat exchanger in the home to inlet 57 placed at the rear of device 10." Over time some fluid from the reservoir evaporates into the air and is lost. A float valve is connected to the house domestic supply water pressure to keep the reservoir water level constant. **Hardy Col. 4, lines 60-64** "Accordingly, if the water level in water tank 36 is low float 68 will open valve 69 causing a portion of the water circulating in coil 62 and passing to outlet 66 to fill water tank 36 until the water level rises to the desired level." The only connection between Hardy's two separated systems is the float valve 69, which sends domestic water into his water tank 36 to maintain the water level in the reservoir.

I recite a reservoir which does not have a float valve to maintain water level and has only a single below water line connection to the outlet of my pressure relief valve (10) and inlet of my vacuum fluid recover valve (18) (See figures 6, 7, 8, and 9). No fluid is "pumped" into or out of my reservoir. The reservoir I recite contains excess fluid from the fluid loop which is forced into the reservoir through the pressure relief valve by thermal expansion, and fluid exits the reservoir by vacuum from the fluid loop drawing fluid back in through the vacuum fluid recovery valve. I define "overflow reservoir" as the container which holds excess fluid from the closed heat transfer loop. **Hardy Col. 5, lines 3-4**, "Overflow 71 further regulates the water level in tank 36." Overflow 71 is a drain which will keep the water level from going too high in his reservoir tank 36, if float valve 69 sticks in the open position. I submit that Hardy has an overflow 71 on his reservoir tank 36, which is fundamentally different from the "fluid overflow reservoir (12)" which I have recited; hence Hardy has not anticipated my invention.

Hardy's system for providing "hot water for domestic water" is a pressurized coil 62 of potable water. His system includes a pressure relief valve 74 and a vacuum breaker valve

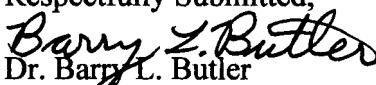
65, which are indeed in parallel, but both vent to atmosphere. I recite a pressure relief valve (10) and a vacuum fluid recovery valve (18), which are in parallel, but both are connected to Overflow Reservoir, below the fluid level. In Hardy's arrangement the pressure relief valve 74 discharges water/steam into the air and onto the floor and the vacuum breaker valve 65 draws only air back into the closed loop to prevent boiler reservoir non-potable water backflow into the domestic water fluid loop through float valve 69. I submit that Hardy has parallel pressure relief 74 and vacuum "breaker" relief 65 valve which go from the fluid loop to the atmosphere, which is fundamentally different from the parallel pressure relief (10) and vacuum "fluid recovery" relief (18) valves which go from the fluid loop to below fluid level in the overflow reservoir (12) which I have recited, hence Hardy has not anticipated my invention.

I recited a vacuum fluid recovery valve (18), which is not the same as Hardy's vacuum breaker valve 65. Both valves fall under the general category of vacuum relief valves. A vacuum fluid recovery valve (18) has its inlet below the water level of a fluid reservoir.

My Specification, DETAILED DESCRIPTION OF PREFERRED EMBODIMENT,
Par. 1, lines, 9-11 "to a pressure relief valve (10) which includes a vacuum recovery valve to let expelled heat exchanger fluid (13) back into the system from the fluid overflow/recovery reservoir (12), while excluding non-condensable air." A vacuum breaker valve 65 must have its inlet open to air to prevent contamination of domestic water with non-potable water. **Hardy col. 5 lines, 5-11** "Placed on inlet 64 is vacuum breaker 65 such as a vacuum relief valve of conventional construction and as commonly commercially available from sources such as from Hardy Manufacturing Company, Inc., Route 4, Box 156, Philadelphia, MI 39530 and others, the breaker to prevent accidental siphoning of tank water into the home water supply". I submit that Hardy has a vacuum breaker valve 65 on his domestic water loop, since its function is fundamentally different from the vacuum fluid recovery valve (18) which I have recited, hence Hardy has not anticipated my invention..

I recite a single system where heat is collected in a solar collector and transferred to a hot water tank for domestic water. This closed heat transfer loop heats up and cools down every day. I claim a system for allowing the fluid expansion within the heat transfer loop to be accommodated by fluid and or trapped gas exiting the system via the pressure relief valve (10) into an overflow reservoir (12). I also claim a system for allowing the fluid contraction within the heat transfer loop to be accommodated by fluid entering the system via the vacuum fluid recovery valve (18) from an overflow reservoir (12). I believe that my claims are not anticipated by the patents cited as anticipating them.

Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

Respectfully Submitted,

Dr. Barry L. Butler
Tel: 858-259-8864